

REMARKS

Claims 1-18 stand rejected.

Rejection of Claims Under 35 U.S.C. § 102

Claim 15 stands rejected under 35 U.S.C. § 102(a) as being anticipated by the PCI Express™ to PCI/PCI-X Bridge Specification. Applicants respectfully traverse this rejection. Applicants concede the argument made in the Final Office Action of 01/22/2007, page 6, that a substrate may be interpreted to include a motherboard. However, Applicants assert that anticipation of claim 15 is not supported by the referenced prior art because all of the elements of claim 15 are not taught by the reference. In addition, Applicant's use of the term "substrate" will be clarified to distinguish it from the broader definition suggested by Examiner.

The Final Office Action on page 2, attempts to draw a parallel between the integrated circuit of claim 15 and figure 1-2 of the PCI/PCI-X Bridge Specification. However, anticipation requires that each and every element be found in a prior art reference and that is not the case here. While the last sentence of the Office Action on page 2 states that, "the PCI data bus transmits data only between the first and second circuits" this statement is not supported by the referenced specification.

In the referenced PCI/PCI-X Bridge Specification, figure 2, the PCI data bus does NOT transmit data only between the first and second circuits as asserted in the Office Action. As can be seen in the referenced figure, the said PCI data bus contains five PCI devices.

The PCI Express to PCI Bridge that the Office Action identifies as the second circuit may communicate with all five PCI devices shown in the figure. This makes clear that the assertion in the Office Action is inaccurate.

In fact, as will be argued later, PCI buses and data buses in general are inherently designed to enable communication between a multitude of devices. The referenced figure is a good example of this common understanding of the purpose of bus protocols. Given this commonly accepted purpose of bus protocols such as PCI, it is in fact counter intuitive to restrict a bus protocol to communicate between only two devices as detailed in the limitation of claim 15. Thus, the limitations of claim 15 are not only unanticipated by the PCI/PCI-X Bridge Specification, it is not even an obvious use of data bus technology.

However, to satisfy 35 U.S.C § 102 it is enough that claim 15 contains an element different than the referenced prior art. That is, “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegall Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Given that the referenced PCI specification contains several PCI devices on the PCI data bus and that claim 15 contains only one PCI device, there is a difference between the elements of claim 15 and the referenced prior art. Thus, claim 15 can not be anticipated by the PCI/PCI-X Bridge Specification.

The Office Action of 01/22/2007 on page 7, in rejecting claim 15, makes the additional argument that a “substrate” includes a mainboard or motherboard. Applicant concedes that a substrate may include this broader understanding.

However, Applicant's use of substrate is not intended to be so broad. As used by Applicant in conjunction with defining a PCI Express device this broad definition is simply not applicable. A PCI Express device is defined as a Peripheral Component Interconnect Express device. By definition, a peripheral is not something that is integrated into a motherboard. Rather, the opposite is true; a device such as that claimed by the Applicant is intended to be strictly peripheral and removable from the motherboard. Thus, as used by Applicant, substrate is limited by being defined in conjunction as a PCI Express device. In other words, when "substrate" is modified by being a peripheral, it can no longer support the broader definition making it part of the motherboard. However, Claim 19 has been added to reflect the Examiner's broader understanding of substrate and has thus been defined in terms of a PCI Express, or peripheral, device.

Rejection of Claims Under 35 U.S.C. § 103

Claims 1-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the cited reference in view of U.S. Patent No. 6,594,712 issued to Pettey, et al., ("Pettey"). Applicants respectfully traverse this rejection.

At present there are two outstanding arguments forming the basis of the 35 U.S.C. § 103(a) rejections. The rejection argument from the Non-Final Office action of 07/18/2006 ("2006 Action") was reproduced in the Final Office action of 01/22/2007 ("2007 Action") which also included a separate argument for rejection. Neither argument has in any way addressed Applicant's position.

The 2006 Action argues that, "Petty [sic] teaches one to expand the bandwidth to support more PCI devices with the Infiniband architecture... Hence, it would have been

obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt Petty's [sic] teaching onto the admitted prior art because Petty [sic] teaches one to support more PCI devices by adapting PCI devices onto a higher bandwidth bus protocol." (Page 3 and 4 of the 2007 Action.)

However, the 2006 Action addresses a point altogether different than the one made by Applicant. While Applicant concedes the argument made in the 2006 Action may be valid, it is not relevant. Applicant argues that Pettey does not teach or suggest **restricting** Infiniband, or *any* bus protocol, to communication solely between two devices. This point will be discussed fully in a later section.

The 2007 Action on page 8 makes the additional argument that, "...what is missing from the acknowledged prior art is the use of an interface adapter for adapting a PCI device to a PCI Express environment. Pettey fills the gap by teaching the use of an interface adapter to interface a PCI device into the Infiniband environment which is very similar to the PCI express architecture... It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an interface adapter for PCI devices as taught by Pettey for adapting such PCI devices to another environments [sic] such as the PCI express environment."

However, the 2007 action addresses a point altogether different than the one made by Applicant. While Applicant concedes the argument made in the 2007 Action may be valid, it is not relevant. Even if Pettey teaches or suggests using a PCI Express bus protocol in place of the Infiniband bus protocol, this is not related to what is claimed. The claimed invention relates to **constraining** a bus protocol to communication solely between two devices.

Applicant requests a response to the argument that the claimed invention which configures a PCI data bus to transmit data *only between a first and second circuit* is not taught by the referenced prior art. Since this argument was made in both of the responses of 11/18/2006 and 04/20/2007, yet were never addressed, they are still applicable. In addition to Applicant's prior argument, a supplemental argument is presented.

In both the 2006 Action and 2007 Action, arguments are made that Pettey may be broadened to use more than one PCI device or to use different bus protocols. Applicant admits that it is natural to broaden the concepts of prior art, however the claimed invention does not lie within these broadened concepts. Instead, Applicant's invention requires a counter intuitive leap. As reflected in both Office Actions, it is an obvious impulse of one skilled in the art to expand the capabilities of a system – it is counter intuitive to handicap a system. It is as counter intuitive as using a Cray Supercomputer for a calculator and nothing more.

As previously argued, Applicant claims the configuration of a bus protocol connected to solely two devices – a first and second circuit. This arrangement is nowhere to be found within Pettey. The reason is that the standard way of thinking of bus protocols is **not** solely between two devices. For example, the following definitions are from Wikipedia:

- PCI Express (PCIe): "The PCIe physical layer consists of a network of serial interconnects."
- Infiniband: "Infiniband uses a switched fabric topology" where a switched fabric is a, "computer network topology where many devices connect with each other via switches."

- PCI: "...a computer bus for attaching peripheral devices to a motherboard."

All of these bus protocols are defined to address the problem of interconnecting multiple devices. If only two devices need to be connected, there would be no need to define a bus protocol at all, much less a protocol that requires industry acceptance. All that would be required is a data bus that connects the two devices of interest. Applicant has instead taken the concept of a bus protocol and restricted it in order to achieve the novel goal of being able to upgrade an existing PCI device to a PCI Express device without having to redesign the core circuit. Herein lays the heart of the claimed invention.

Moreover, Wikipedia defines a computer bus itself as, "a subsystem that transfers data or power between computer components inside a computer or between computers and typically is controlled by device driver software. Unlike a point-to-point connection, a bus can logically connect several peripherals over the same set of wires." The definition draws an incompatible understanding between a point-to-point connection and a bus connection. Indeed, the terms are defined in contrast to each other. This understanding of the purpose of a bus supports the counter intuitive nature of the step taken by Applicant in using a bus protocol in the limited arrangement described in the claimed invention.

Overall, the Applicant's configuration in the claimed invention between solely two devices using a PCI bus is not taught or suggested by Pettey, and Applicant's claimed invention is in fact a counter intuitive step from the art. At best, as proposed in the Office Actions, Pettey suggests a more generalized configuration using bus protocols, not the more particularized and restricted configuration of bus protocol usage such as that claimed. Applicant is in fact bucking convention wisdom regarding bus protocol usage.

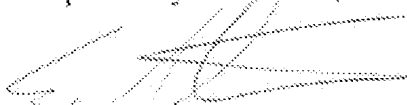
Thus, Applicant's invention would not be obvious to a person having ordinary skill in the art.

CONCLUSION

In view of the amendments and remarks set forth herein, the application and the claims therein are believed to be in condition for allowance without any further examination and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5093.

If any extensions of time under 37 C.F.R. § 1.136(a) are required in order for this submission to be considered timely, Applicant hereby petitions for such extensions. Applicant also hereby authorizes that any fees due for such extensions or any other fee associated with this submission, as specified in 37 C.F.R. § 1.16 or § 1.17, be charged to deposit account 502306.

Respectfully submitted,



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